





## SMOKE NUISANCE.

SUMMARY OF EVIDENCE TAKEN BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS, ON THE SMOKE NUISANCE.

[Continued from the Mining Journal of last week.]

**HENRY HOLLOWAY, Esq. (of Manchester), examined.**—His experiments were limited to the admission of air in preventing smoke and economizing fuel. Was struck with the principles laid down in Mr. Williams's *Treatise on Combustion*, which is an invaluable guide to practical men, on a subject little studied or understood by them. Finds, by the admission of air to the body of the furnace, that, most unequivocally, there is a decided saving of fuel, and lessening the dense smoke. The workmen were at first prejudiced against it; are now converts to the admission of the air. Saves a fifth part of the coals. To prevent smoke, it is essential to admit air somewhere else than through the bars. If air is admitted only through the bars, when a fresh charge of coal is thrown on, the production of gas is at its maximum, and the quantity of air admitted at its minimum, and much smoke is made; on the admission of air the flames become clear, with quite bright flame. The fireman sees the change; the change is ascertained by the pyrometer. It is an iron wire, eighteen feet long, extended in the side flue, and projecting through the brick wall in front, where it is jointed to the short arm of an index lever; as it expands by contrast the temperature is indicated; the arms of the lever are 10 to 1. The simplest plan is by the admission of air, by a constant aperture, requiring no attention. The increased steam raised was 31 per cent. more from the introduction of air through a permanent opening of forty-three square inches. When the air was not admitted, the temperature rose but to 1180°, and the heat escaping by the chimney to but 480°; whereas, with the air, the former was 1370°, and the escaping heat 710°. The increased heat is instantly indicated by the pyrometer. The prevention of smoke is most unequivocally attended with a decreased consumption of fuel. Agrees with Mr. Williams in his *Treatise* which is invaluable as a certain guide to practice, in the application of right principles—that the creation of heat is one thing, and making use of that heat is another. Has produced more heat than the boiler could take up. Looking at the question practically, prefers a constant opening for the air, one and a half inch to three inches, to every square foot of grate. Practical men were encouraged, by the opinions of the scientific men, to follow out the principle put into so popular a shape by Mr. Williams. The water evaporated is the best test of the relative modes of constructing and working furnaces. It may or may not be so, according as the boiler is calculated to take up more or less of the heat that is produced. Draws a distinction between the production of heat, and the application of that heat to the raising of steam. The steam produced is not necessarily a measure of the heat produced; it is a measure of the relative heat produced by the same boiler, but with a different boiler it ceases to be a measure. The question of the rapidity of the production of steam, and the economy, are quite distinct.

**Captain Sir W. E. FARMY, R.N., examined.**—Is commander of steam machinery in the Admiralty. Has given attention to the plans applicable to steam-vessels. Has made memoranda relating to each patent employed. Chamber's has been tried in the *Pinto*. It was not considered to answer, besides being a cumbersome apparatus. The report is, that "a considerable portion of the smoke was consumed." Ivimey's plan was examined by the engineers sent to Edinburgh; this was by a jet of steam. The report was, that there is no smoke visible. The next plan tried was that of Mr. Joseph Williams. It was adopted in four Admiralty vessels—the *Urgent*, the *Merrill*, the *Driver*, and the *Showerwater*. The air is warmed by passing through iron chambers at the sides of the furnace. In the *Merrill* some of the tubes were burned out. The plan was so unsatisfactory, that it is discontinued in the whole of these vessels. Have not tried the plan of Mr. Charles Williams. Does not know that he ever asked us to try it. From publications he has seen, knows he has attended more to the theory, and has done more practically, than probably any other man in England. Has no experience in his plan; has seen reports favorable to it. The next on the list is Mr. Samuel Hall's. It is a number of bent pipes; the air is warmed; it is in the *Showerwater*; has not been able to form a fair judgment; requires more experience of it. The next is Mr. Rodda's. Is not applicable to marine boilers; is in operation at Woolwich; is considered complicated. The report is, that a considerable portion of smoke is consumed. The next was Mr. Jukes's. Saw it in operation; its complication was an objection to its use; the mass of materials puts it out of the question for marine boilers. The next is Mr. Godson's. Does not consider it applicable to marine boilers; is in operation at Woolwich; it is stated that all the smoke is burned. Has not seen the plan of Mr. Charles Wyo Williams. No plan is adopted in the Queen's yacht; preferred using coal that produces little smoke.

**Mr. CHARLES WYO WILLIAMS** was further examined, with reference to the evidence of Sir E. FARMY. States that the four plans put in the Admiralty vessels proposed to be Mr. Rodda's plan, but were all different; not one of the four resembled the others, and none of them resembled the patent around—viz., Rodda's. As to the supply of air, if regulation is necessary, it ought to begin with the larger supply—the 100,000 cubic feet of air required for the ship. Cannot see how the 100,000 cubic feet of air required for the combustion of the gas of each ton of coal can reach that gas in a pure state, if it has to pass through a body of incandescent fuel, as stated of Mr. Jukes's plan.

**Mr. T. LLOYD** examined.—Is chief engineer at Woolwich. Has tried many plans; with one, smoke would no longer be a nuisance. Jukes's and Godson's certainly burn the smoke; saw Ivimey's plan very successful at Edinburgh. It is far more difficult to effect the desired object in marine than in land boilers. In the royal yacht countless coals are used. Has not seen Mr. Wyo Williams's boilers in steam-boats. Ivimey's plan is applied to marine boilers; it is a fan-shaped pipe, with a number of holes, which projects steam into the flue. Does not believe there is any saving in fuel by its use.

[Many scientific and practical men of eminence were subsequently examined by the committee, among whom were Dr. ARNOTT, Capt. BRIGHT (of Manchester), Mr. JUKES (engineer of the Liverpool Railway), Edward BULLY, Esq., R. O. MURPHY, Esq., JAMES PARKES, Esq., W. T. BRANDS, Esq., and MICHAEL FARADAY, Esq., F.R.S. The examination of these witnesses elicited much important matter, and from its scientific and practical character had considerable weight with the committee. We had intended to have gone through the whole, as tending to throw much light on this important subject. We find, however, that our labours are about to be anticipated, by the publication of the entire evidence, and we can, therefore, only refer our readers for the remaining testimony to the report itself, as well as desiring attention.]

**HYDRO-ELECTRIC MACHINE.**—The Director of the Royal Polytechnic Institution were determined to maintain the high character they have already obtained, by the continual addition of such novelties in science and art as would, from their attractive power and interest, render their establishment an object of the highest value and importance to the scientific as well as amusement-seeking world. On Thursday evening we witnessed some experiments with Armstrong's hydro-electric machine, which has just been fitted up, with the view of pointing out to the public that electricity in large quantities is developed from steam while emerging from the boiler, and which electricity is dissipated with that produced by the prime-mover, and the other usual modes of obtaining it. In addition to the experiments usually made with the electrical plate glass machine, several novelties, and better obtained, were shown, such as setting fire to wood shavings and pieces of paper, which was effected by a direct spark from the boiler. The experiment of the current itself was not of extreme interest, and was explained by Dr. HARRINGTON, who officiated on the occasion; some progress was also made. The experiments on the hydro-electric machine were followed by the exhibition of another new invention, by Mr. LANGRISH, the inventor of the machine—viz., a spring as a source of power, by which small objects were easily shown on a disc in strong relief, and acquired by an extraordinary step. It is proposed also to exhibit the excellent arrangements prepared by the officers of the Institution, whose object appears to be, to provide generally of interest and action, to render the practical exhibition of the sciences accessible to the public; this was especially apparent on Thursday evening, which, being a public meeting, attracted the opportunity of an extensive display of feeling and opinion that steel have been highly instructive to all concerned.

**CONVENTUAL RAILWAY.**—A letter from Utrecht, dated the 10th inst., says:—This morning the first coach of the line arrived from Utrecht to Amsterdam, taking place with complete success, on the route from Utrecht to Amsterdam. In the first place, a locomotive, a tender, and two passenger-coaches, proceeded at a moderate speed of speed to Amsterdam, in order to ascertain that all the details of the service were in good order; all the conventional and officers of the railway were present at the coach. On the return the train proceeded with greater regularity, and the distance between Amsterdam and Utrecht (10,000 yards) was performed in sixteen minutes. The distance between Amsterdam and Amsterdam is 10,000 yards, and that more than one-third was made in sixteen minutes.

## BRITISH ASSOCIATION—BRIEF NOTICES OF PROCEEDINGS.

**"Chromotype: a New Photographic Process."** By Mr. R. HUNT.—The author, in pursuing a long series of experiments on the properties of the solar rays on the salts of different metals, was led to the discovery of a process by which positive photographs may be easily produced. Several metallic chromates may be used, but the author prefers that of copper, the most certain effects being produced by it, and in a much shorter time. Good writing paper is washed over with a solution of sulphate of copper, and partially dried; it is then washed in a solution of bicarbonate of potash, and dried at a short distance from the fire; and paper thus prepared may be kept for any length of time. An engraving, specimen of botany, or any subject to be copied, is placed in a photographic copying frame, and exposed to the sun's rays, for any time, in proportion to the intensity of the light, generally from five to twenty minutes; the result is a negative picture, which, being washed over with a solution of nitrate of silver, immediately produces a beautiful deep orange plate upon a light blue or perfectly white ground, and is indelibly fixed by washing in pure water and dried. When saturated solutions are used, a negative picture is formed; but, by adding to these solutions three or four times their bulk of water, a very faint positive one is at once apparent, which is brought out to great delicacy by the nitrate of silver; if this positive picture be now placed in a very weak solution of common salt, a faint negative outline is produced—which may be converted into a positive one, of a fine colour by a few minutes exposure to the sun's rays.

**"On the Influence of Light on the Growth of Plants."** By the same author—who has for some years devoted himself to an investigation of this subject. Plants, when made to grow under the influence of the red rays, bend from the light as something to be avoided, while the blue or chemical rays are efficacious in quickening their growth. Although, however, the blue rays are found to give vigour to the young plant, they are too stimulating to insure perfect growth, appearing to exhaust themselves in the production of beautiful green foliage.

**"On the Decomposition of Carbonic Acid Gas, and the Alkaline Carbonates by the Light of the Sun."** By Professor DRAPER, of New York.—The decomposition of carbonic acid gas by the leaves of plants under the influence of the light of the sun is one of the most remarkable facts in chemistry. A difference of opinion has prevailed—some observers of the phenomenon concluding that the process was due to the rays of light, while others maintained that it was the chemical rays; to settle the point, the author had recourse to the spectrum. A series of tubes half an inch diameter, and six inches long, were arranged, so that the coloured spaces of the spectrum fell on them; in these tubes water, impregnated with carbonic acid gas, was placed, and also a few green leaves. The result of the experiments was as follows:—In the tube on which the red rays acted a minute bubble of gas appeared; in the orange, a more considerable quantity; in the yellow, comparatively a very large amount; in the green, a much smaller quantity; and in the blue, indigo, and violet, not a solitary bubble; from these facts, the author concluded that it was the rays of light that effected the decomposition. This conclusion, as opposite to hitherto received opinions, caused some discussion, and Mr. Hunt said he should lose no time on his return to England, in prosecuting the investigation.

**"On the Formation of Paracyanogen."** By Mr. T. SPENCER.—A new method of obtaining paracyanogen is proposed by the author more easy than any yet practised; it is, to take a solution of cyanide of potassium, specific gravity 1.200, at a common temperature, and pass a current of chlorine through the solution until thoroughly saturated, which is indicated by effervescence taking place on its surface. While passing the chlorine, the temperature is rapidly raised, until it has acquired 180° or 190° of Fahrenheit, and at the period of saturation dense white fumes pass off, which afford strong indications of ammonia and cyanogen. At this stage of the proceedings, the solution becomes turbid and dark, and if left to stand for a few hours the solution will be found to have assumed a scarlet colour, and a copious black precipitate to have settled, which, after decantation, must be collected on a filter and washed; the washing should, however, be performed carefully, as the paracyanogen is partially soluble in water, which seems to be the only difference it possesses from the same substance formed by heat in the crucible. When the solution has absorbed a volume or two of chlorine, it assumes a beautiful red colour, which gradually becomes an opaque scarlet. The solution may still have chlorine passed through it, and fresh portions of paracyanogen obtained; combining bromine and iodine with the cyanide of potassium produces the same results as with chlorine.

**Mr. WEST** read a paper "On a Remarkable Case of Corrosion of Lead by Spring Water, after passing through an Iron Pipe."—In this case the water had flowed from a spring into, and from, a leaden reservoir through leaden pipes, for sixty years without injury to either, but when conveyed from thence into other cylinders through iron pipes, it became so destructive that the bottoms of the cylinders had to be renewed in five or six years. The analysis of the water taken from the three situations was the same, with the exception of the lead in solution, and the author considers the cause must be mechanical, and as he attributes the mischief to contact of oxide of iron with the lead, he recommends the coating the iron pipes or the lead cylinders with some substance which will prevent the contact of the lead with the peroxide of iron.

**"On the Direction of Currents, by which certain Gravel-hills and Straty Bluffs were Distributed in the north of the counties of Mayo and Sligo."** By R. GRIFFITH, Esq.—The straty bluffs of Ireland were distributed by a force moving generally in a north-west and south-east direction, modified by the opposition of mountain ridges and deep valleys. The deposit usually consists of clay and rolled fragments of limestone from the carboniferous rocks, which occupy two-thirds of the island, without any trace of stratification; it frequently exceeds 100 feet in thickness, and occupies all the valleys. In the granite and slate-hills of Wicklow the limestone gravel has passed through the valleys of that range, and formed a valuable deposit to the east of Mount Leinster—extending over the Carlinian state, east of Newtown Barry. The summit of Blinthead-hill, on the northern edge of the Wicklow granite district, is 1200 feet above the level of the sea; to the eastward of these hills there is no limestone gravel, whilst it is abundant on the lower hills and valleys in the north. Besides the limestone gravel, boulders of granite and conglomerate are occasionally found scattered on the surface, and not included in the clay drift; and the author has been able to detect small boulders of the Connemara granite, in the valley east of the Slieve Donard mountains, in the King's County, and in the limestone district of Galway, indicating a north-west and south-east direction, in the line of transport throughout a large part of Ireland; this, however, has not been universal—the Dr and Carlin mountains, running from south-east to north-west, twelve miles apart, are flanked by strata belonging to the carboniferous system; towards the summit boulders of yellowish grey limestone occur, while, towards the valleys, large boulders of granite are strewn. Following Lough Eskey to the sea, enormous boulders of granite are thickly strewn over the limestone country for ten miles—one of them weighs about 100 tons, and those nearest the shore are the most extraordinary in size. Taking these and other facts into consideration, it is evident that the currents in these localities must have come from the south, and in the other districts of the island from north-west to south-east.

(To be continued.)

**IMPORTANT EXPERIMENT—WOOD PAVEMENT V. IRON RAILWAY.**—While the inhabitants of our towns are in a state of uncertainty as to their railway, we are glad to see they have decided to make some improvement in their streets, by trying the effect of a newly-invented wood pavement—a specimen of which has been laid down opposite the residence of the Mayor in the Rue de l'Étoile. It is a combination of wood and asphalt, promising seemingly the advantages of both—without the inconveniences of either, being impervious to water, free from danger to horses, and costing 10 per cent. less for carting roads, and as much as 10 less for foot pavements. Should it answer, we hear it is talked of laying it down hence to Antwerp, and reaching locomotive-carriages upon it. If this be done, bridges, cuttings, &c., will be unnecessary, as it will know locomotive steam-carriages, on such a pavement, would ascend the steepest hill on the road with the greatest facility and expedition. If this should be seriously thought of, the capitalists of Antwerp could accomplish the object themselves; taking it to be eighty miles in America, and that six yards of the road in breadth was laid down at a cost of 10, the total expense would not amount to more than 20,000, or 30,000. If English capitalists will not embark in the railway, French capital can accomplish this, which would render necessary the costly tolls. How thankful, then, should we be to Colonel Sir J. ELLIS, the inventor of this admirable substitute for rail-ways; they would him severely at the battle of Waterloo, in return he gives them the means of prosperity; and, we have no doubt, should the present idea be carried out, that they, in their turn, will erect a monument to his memory.—*Standard* item.

**BRITISH AND FOREIGN INSTITUTE.**—We are glad to find that this institution continues to make steady progress in public estimation, and in the esteem of its members. Among the last names enrolled on its list were the Hon. Sidney Herbert, M.P., Secretary to the Admiralty; the Rev. T. Stoddard, Trinity College, Cambridge; Major-General Sir R. Murray; Mr. R. W. Mendenhall, of the Royal Mint; Sir Thomas Liddell, Bart.; the Hon. and Rev. E. Vernon Harcourt; Lord St. Albans; Sir Charles Stansfeld, Bart.; the Earl of Cromer; Dr. Gair; Sir George Pomeroy; the Rev. Alex. Keith, D.D., author of the collected work on the prophecies; the George Gough, Bart.; Lord Pembroke; the Rev. Father Mathew; the Bishop of Chichester and family; General Lord Lyndhurst; General Raper; the Duchess of Victoria; and the Duchess of Devonshire; Viscountess Cambridge; the Marquis of Lorne, &c.

**PHENOMENON OF THE GLOW-WORM.**—The last subject of this interesting phenomenon—the light of the glow-worm—seems to have attracted an important attention from the scientific community of M. M. M. M. The issue is of his observations and experiments, so as to prove that the phosphorescence of the glow-worm is simply a case of combustion of carbon by means of the oxygen dissolved in the atmosphere, and is, therefore, usually qualified to inspire and ordinary combustion.

## PROGRESS OF IRON SHIP-BUILDING.

It is with much pleasure we are continued proofs of the applicability of iron for the construction of ships, either sailing-vessels or steamers, and the consequent increased demand for that material in this important science of ship-building. Trials with no less than three new iron ships have taken place near Liverpool during the past week—the *Lothians*, the *Helen Macgregor*, and the *Margaret*—the former of these is a singular looking vessel with two funnels, built by Mr. Laird, of North Birkenhead for the East India Company, and intended to navigate the Indian river; she is 160 feet long, with 34 feet breadth of beam, has a pair of engines of 45 horse power each, and her breadth and flatness are such, that with engines, coal, and all her stores, her draught of water is only 20½ inches; she answers the helm with wonderful facility, and can be turned in her length, has a rudder at her bow as well as at stern; and is, in fact, totally different from anything yet built, and is likely to lead to considerable improvement in the construction of vessels for shallow waters. The *Helen Macgregor* is a fine vessel of 600 tons, also built by Mr. Laird, for an enterprising Hull merchant (Mr. Goe), and is intended to run between that port and Hamburg; her length of keel is 180 feet, beam 26 feet, hold 16 feet. All her plates, ribs, and fastenings are of immense strength, and further secured by four water-tight bulkheads, dividing her into five compartments. The engines of 230 horse power have four cylinders each—a plan patented by George Forrester and Co.—these are inverted, the piston-rods projecting below, the boilers are tubular, and capable of producing a large quantity of steam in a small space, and the whole of the engines and machinery take up much less room than on the old plan, and a great saving of fuel is effected. On the 8th inst. this vessel made her first trip to sea, having on board several East India directors, who happened to be in the town; her engines worked admirably, and no vibration could be perceived; she proceeded towards Bangor and the Menai, where the company landed, and, after waiting some hours, she returned to Liverpool. The iron schooner *Margaret* is adapted either for sailing or steaming, for, in addition to the rigging of a fast sailing schooner yacht, she is furnished with Smith's Archimedeal screw propeller; her length is 120 feet, width of beam 19 feet 3 inches, and will carry 170 tons; she has two small engines of 14-horse power each, and is divided into four compartments by three of Mr. C. W. Williams's water-tight bulkheads—a system that should ever be adopted, as almost insuring safety in case of striking and springing a leak, as the buoyancy of the vessel is still preserved. With a fresh breeze, and all her sails set, the propeller also at work, she made nine and a half to ten knots per hour, but as there was considered some defect in her boiler and furnace, means have been taken to amend them, and her speed with the same quantity of fuel, is expected to be increased. It has not transpired what trade she is destined for.

**SUPERIORITY OF WELSH COAL FOR STEAM NAVIGATION.**—The coal specially selected for the use of the *Victoria* and *Albert* royal steam yacht during Her Majesty's voyage was the Llangeoch coal, which has been known for many years to the officers of the dock-yard; and there also seems to be abundant evidence from other authorities that this is the best steam navigation coal. The selection has, therefore, been wisely made, and shows the care which has been extended to every part of the equipment, though not in some other respects equally fortunate in the results as in the choice of coal. The absence of smoke in the combustion makes it peculiarly fit for such a service as a pleasure voyage of Her Majesty. Cargoes have also been sent to Sheerness, Portsmouth, and Plymouth, to be stored for the steamer's use. In the experimental trial which was made at the Woolwich Dock-yard previously to this decision, we have been informed that the result was, that 1 lb. of this coal evaporated 9 lbs. 27.7 oz. of water. The Royal Mail Steam Company have also used it in some of their vessels with much success; and why they have not employed it more largely seems to require explanation, particularly as the Peninsular and Oriental Steam Company and the Pacific Steam Company have found its employment advantageous. We believe that those officers of the East India Company who have most studied the subject entertain the same opinion as the Government officers, that this is the best steam navigation coal. Certain it is, that, however great may be the merit of this coal, this special choice of it for Her Majesty's voyage gives it an importance which no other circumstance could have conferred upon it.—*Railway Magazine*.

**THE "GREAT NORTHERN" STEAM-SHIP.**—This noble ship is now lying in the East India Dock, and the numerous scientific individuals who have visited her are unanimous in their encomiums of the entire arrangements. She was built in Londonderry by Mr. Coppin, and is fitted with Smith's Archimedeal screw. Her length from figure head to stern is 247 feet; extreme breadth, 37 feet; depth of hold, 28 feet; draught of water, 16 feet; power of engines, 500-horse; diameter of cylinders, 48 inches, with 4 ft. 6 in. stroke; and the diameter of the screw is 11 feet. The engines are removed further aft, in consequence of the propeller being at the stern, which gives an immense clear space for the stowage of goods, of which it is supposed 1000 tons can be disposed of without inconvenience; the consumption of coal is about one ton per hour, and she can take with perfect ease from 600 to 700 tons, with plenty of room below hatches for other stowage; she is also fully rigged as an ordinary ship, her masts being ninety feet high, and her sails containing 6700 yards of canvas. On her voyage to London she performed, in one part of her passage, sixty-six nautical miles in five hours. She has stores and some considerable improvements in her engine, at an expense of 4000l., and an experimental trip will shortly be made. Calcula is her destination, and, as, by the absence of the paddle-wheel, all vibratory motion will be done away with, the quietude of a sailing vessel will be enjoyed, with the rapid transit of a steamer. This vessel and the *Great Britain* will, in a great measure, establish the superiority or otherwise of the screw propeller to boats of large size.

**STEAM COMMUNICATION BETWEEN ENGLAND AND FRANCE.**—Considerable progress is making to extend steam-boat communication, in connection with the railways, between our southern ports and the various coast towns of France. A new boat, the *Water Lark*, built by Messrs. Dickson, of Blackwall, and fitted with two engines of 35-horse power each, on Maudslays's annular principle, was tried on Monday last, and successfully accomplished 104 miles per hour; she is intended to run between Folkestone and Boulogne, and so satisfied are the proprietors with the build and engines, that they have ordered another for the same station. It was recommended at the half-yearly meeting of the South-Western Railway, by the directors, that 1l. per share should be subscribed, for the purpose of establishing regular lines of packets with France, and we think a public meeting should be called to take the matter into consideration, as, if a disposition is not shown by the company to extend their communication with the French coast, other parties will, undoubtedly, be found, who will invest capital in so inviting a speculation, to the manifest inconvenience, if not injury, of the company.

**TAYLOR'S LIFE PRESERVERS.**—Our attention has been called to some ingenious inventions for the preservation of life at sea by Mr. Francis Taylor, of Leith. On Saturday last he experimented in a very rough sea off Leith. Put with a cabin stool, which, in three seconds, he transformed into a life preserver, and boldly dashed into the waves. He proceeded in a direct line for Leith Roads, and landed in five style on the sands outside the Martello Tower, after being two hours on the water; he measured 204 inches by 15 inches, but, when made into a seat, is only 18 inches by 15. He has also been for ships' anchors, in which he has twice crossed the Forth from Leith, a distance of seven or eight miles. He has invented buoyant chairs, tables, stools, beds, &c., capable of supporting individuals, and he suggests the utility of having such in readiness in dwellings, near large bodies of water or rivers, as, in case of danger, a child might manage some of them, and carry a rope or other means of safety to a person in the water. The novel facility attending the numerous shipwrecks which have lately taken place, renders any invention likely to prove of real value in the preservation of life from drowning most important, and willingly will we lend our aid to make them known to the public.

**STEAM-BOAT ACCIDENTS IN AMERICA.**—During twenty-five years of steam-boat navigation on the western waters, from 1816 to 1841, 220 accidents have occurred, causing the loss of 1270 lives! Of these accidents, nearly nine were by explosions and collisions, twenty-eight by fire, twenty-five by shipwreck, from gales, collisions, &c., fifty-two from masts and masts, and twenty-four from different unknown causes.—*New York Tribune*.

**GENUINE ELECTRICITY.**—Two fine specimens of the electric arc have arrived in this country by the brig *Rossmore*, Captain Starch, from Peru, and have been purchased by the proprietor of the Adelaide Gallery. They were caught in one of the branches of the Andes, to which steel, and its tribulation, it is believed to be modified. The captain took three on board, but one died on the passage, and with great pains he has succeeded in placing the two in possession of those who, from their experiment in the habits of the natives, from the one exhibited three years, it is to be hoped will succeed in their preservation. The captain of the *Felic*, which left Southampton at the same time as the *Rossmore*, also had three with him, but they all shortly died. The captain who succeeded in bringing the first lot to Europe (the one exhibited recently at the Adelaide Gallery) looked it about in every scientific institution without obtaining a purchaser, and, in a moment of despair and weariness, he threw it into the dock of the quay by St. Mary-le-Tower; only the following morning he regretted of the rock out, and went to the spot, where he found his old enemy dead from cold; it, however, recovered—was then dry purchased by the company which at that time possessed the Adelaide Gallery—and was by them rescued and exhibited for some years, during which the question was closely solved, whether the electric power of the genuine electricity is identical with atmospheric electricity—all the experiments dividing in the affirmative. One of the ground cells is exactly the same colour as iron, with the exception of the silicium; the other is covered with brownish spots—probably, iron and iron. They are about 2 ft. 6 in. in length, and appear in excellent condition.



**YORK AND LONDON LIFE ASSURANCE COMPANY.**  
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## NOTICES TO CORRESPONDENTS.

The *MINING JOURNAL* is regularly published about two o'clock on Saturday afternoon, at the office, No. 24, FLEET-STREET, where it can always be obtained, and there is no cause for irregularity in its delivery, in town, or in the country, the part of the agent through whom it is ordered; but, as respects its transmission to country subscribers, the blame is shared with the Post-office authorities.

"W." (Leicester).—A report of the Transactions of the Institution of Civil Engineers regularly appears in the *Mining Journal* during the session; and further details notices of the more important papers, as opportunity offers.

"W." (Birmingham).—The last note was forwarded, as directed. We should be glad to hear what progress has been made, and, if possible, to be favoured with some particulars of the invention and its advantages, for publication.

Subscriber (Lancaster).—The marine glue is sold by the painter, at his manufactory, which is, we believe, in Limehouse; but we are not aware of what place, or if any agents have been appointed. We are surprised that it has not yet been introduced into Plymouth Dock-yard, for we thought the remarkable properties it has been stated to possess, as frequently alluded to in our columns, would have caused its almost universal adoption. We should be glad to hear again from our correspondent.

More extensive premises than those lately occupied being found necessary, the establishment of the *Mining Journal* is REMOVED TO 24, FLEET-STREET (opposite St. Dunstan's Church).

## THE MINING JOURNAL, Railway and Commercial Gazette.

LONDON, SEPTEMBER 16, 1843.

\* Parties desirous of ordering the *Mining Journal*, can do so, either direct to the office, or through any news-vender or bookseller in town or country. Notices of irregularity in its delivery are requested to be forwarded to the office, where every endeavour will be made to rectify the cause of complaint.

It is gratifying to be able to state, that the men employed at the copper-works of Messrs. VIVIAN, and others in the vicinity of Swansea, with the addition of those belonging to Messrs. WILLIAMS, FOSTER, and Co., have returned to their work. At the Cwm Celyn Works, however, the men still hold out, but we trust, in a few days more, all differences will be settled.

We are fully sensible of the depression which has taken place in the price of copper, which, however, the smelters have themselves to thank for; and, while they have the power, and exercise it, over the miner in the purchases of ores, we cannot but feel that there are no real grounds for the reduction made. However, far be it from us to raise a question between the employer and the employed; their interests should ever be considered as identical, and, in such sense, we look forward to the day when a reaction in the metal market, and an advanced price, shall justify a comparative rise in the price of labour. We feel assured the smelter will then give to the operative a corresponding benefit with that which he himself derives, and will not forget that, during the "stand out," the workmen conducted themselves in a manner which, to use the words of our contemporary, the *Swansea Journal*, won for them "golden opinions" from, we have every reason to believe, "one and all."

It has been our duty to remark from time to time on the proceedings of the West Cork Mining Company, and we take some credit to ourselves for having been the means of exposing the fraud practised—while the result, as will be seen by our advertising columns, is, that the mines are again in the market, for the benefit of the estate of the late Right Hon. Lord AUDLEY. It will be in the recollection of our readers, that Mr. JOSEPH PIKE (the *revertible* JOSEPH), as executor to the estate of the late Lord AUDLEY, obtained a decree against the company for the residue of the purchase money (£55,000), which, however, thanks to JOSEPH's cleverness—with the view of protecting himself in the amended "Act" obtained—leaves the proprietors free from any individual claim on them, and gives him alone the property, from which is to be derived the benefit of the decree, as settled by the House of Lords.

This is as it should be; for, after having mulcted the unfortunate shareholders of £110,000, by way of part (that is to say, two-thirds) of the purchase money, and plundered them of £55,000 more, by way of expenditure (!)—although we believe they received one dividend out of their own subscribed capital—the only resource he now has, or rather those whom he mis-represents, is the property itself; and this, it will be observed, is advertised for sale in the course of next month.

Now, with regard to JOSEPH PIKE and his scheme, we entertain the same opinion which we ever expressed, and it is hardly necessary to go over the "old told tale"—indeed, it is too notorious to require repetition; but, as the property is now *bona fide* in the market, to be sold for its value to the best bidder, it becomes another question—whether it is or is not worthy of an honest trial. We contend it never has had this advantage, for the game played was too deep to allow of this, and hence we should not feel surprised at finding that an extensive mineral district, such as this is, embracing the ores of copper and manganese, with a large body of slate, and extending over 4987 acres, will yet meet with fair play; and, although the times are depressed, we have no reason to doubt but that the mining capitalist will direct his attention to this tract, and thus, as we hope, give employment to those who stand so much in need—the peasantry of Ireland. Indeed, from the evidence submitted in the "bill of sale," we have every reason to believe that, with an economical application of capital, and honesty of purpose, this district may be rendered highly productive. For the sake of Ireland, we should glory in the success which would be attendant on the resumption of the workings—for, be it remembered, we attacked the man and his measures, not the mineral ground or its resources.

We have further adverted to the subject, devoid of personalities, in another column; but we owe it to ourselves to say thus much of the unprincipled projector of the scheme, which has ruined many in property, while it has been equally destructive to others as regards character.

The subject of taxation of mineral property has afforded some scope for our contemporaries to dilate upon, in the absence of any political or foreign news to occupy their columns, for we find it is only when a dearth of news prevails, that the press generally condescends to notice mining operations, whether to lend their aid in support of the mine adventurer and the working miner, or to throw a feather into the opposite scale. As we, however, find that they take an interest, at the present moment, on a subject of importance, not only involving a principle, but affecting the proprietors of mines, and, consequently, those who work them, we hail with pleasure their co-operation, for no matter which side of the question they take, discussion must be productive of good, and lead to the removal of abuses where such are proved to exist.

It appears that by the old Elizabethan laws, houses, tithes inappreciate, proprietors of tithes, coal mines, and valuable woods, were rendered expressly liable to the poor's rate, hence the construction put upon the Act that all other mines were exempt from such charge—a conclusion at once the most natural and just, while it is contended on the part of one of our contemporaries (the *Morning Herald*) that the term "lands" must be considered as including "the productions of the body of the soil itself, internal and external, and, hence, that as quarries, coal and gravel pits, mineral waters, salt springs, &c., are valuable under the general qualification of the estate, all mines (quoth he) fall under it as well." It is hard to understand the logical reasoning of our contemporary, for he endeavours most studiously to mystify a question, which, in itself, is most simple, and requires not a philosopher nor a second Aristotle to define. Coal mines, as we have already said, are particularly specified by the Act—it is, then, conclusive that the intention of the Legislature was to exempt all other minerals.

We have not space this week to follow our wordy contemporary, but there are one or two absurdities on which it is useful we should set him right—indeed, it is much to be regretted that, with only a partial knowledge of the subject, opinions should be so freely expressed. It is said, in speaking of the exemption from taxes, as relates to mineral property—"Wherefore mine owners should enjoy this singular immunity, it is difficult to say; one argument for it is, the uncertainty of mining profits—the rent usually varying according to the profit." We have not patience with the writer; ignorance so palpable requires not one word from us, for such would be an insult to our readers; yet, for his information, if he possesses no other means of acquiring it, we beg to inform him that he is quite in the wrong—that the rent, royalty, or dues paid, have no reference to the profits, as many ironmasters and mine adventurers know too well to their cost. The dead, or sleeping, rent must be paid—the dues of 1-8th, 1-12th, or 1-20th, on lead, copper, or tin ores, must be paid, whether the mine be working to a profit or a loss. But it is needless to demonstrate this further—the fact, indeed, is so notorious, that we are only surprised at the innocence of our contemporary. Let us, however, follow him a line or two further. He says—"But the profits of all property now rateable fluctuate. Houses and land yield no more fixed returns than mines. If it be assumed that taxation would discourage production, the same argument is applicable to the cultivation of the soil, but land is improved nevertheless." Surely, such argument (!) requires no notice on our part; we are only surprised that he did not ask for tithes, being equally chargeable on mineral as on farm produce. He would, no doubt, have endeavoured to convince his readers that it was to the advantage of the miner to pay 1-10th tithe, as this, added to 1-10th dues, would make one-twentieth charge on the mine, for we can well imagine him sufficiently innocent to arrive at such conclusion. "A mining population (saith he, quoting, as we believe, from the *Report on Local Taxation*) must contribute to the criminals of a county, to the filling its prisons, to the occupation of its lunatic asylums," &c., &c. This position, he observes, is a strong—apparently, an unanswerable—one. We would ask the commissioners who drew up the report, and our contemporary who adopts it, whether they are prepared seriously to contend, that employment tends to the one or other, and most extraordinary is it, that while the working of mines necessarily "contributes to the criminals of a county, to the filling its prisons, and to the occupation of its lunatic asylums," yet that the "filling" of the unions—the charges upon the poor rates—are not mooted. Such assurance and ignorance, as displayed by these worthies, is deserving only of contempt, while the "lunatic asylums" might afford them, by quiet treatment, the means of mental restoration.

As the day approaches for the election of Lord Mayor, we find a degree of excitement to pervade the minds of those who are so scrupulous and nice as to desire that the civic chair should be filled by one who may reflect credit and honour on the citizens of London, and who, moreover, would even disregard the ancient and highly venerated system of electing the Mayor by the rule of seniority as applied to the aldermanic body. Our contemporary, the *Times*, in a letter from a correspondent, recapitulates the main features in the case of Mr. Alderman THOMAS "TALACE" WOOD, who is the senior alderman, and naturally asks, under all the circumstances, whether the livery will elect him, and further, in such case, then whether the Court of Aldermen, after the decision at which they arrived on the inquiry (!) instituted, will not repudiate him—and, as they did last year, declare their votes in favour of the junior alderman—it being the province of the livery to return two members of the Court of Aldermen, while the choice devolves on the Court. We do not deem it necessary to recapitulate the charges we have preferred against Alderman THOMAS WOOD, for they must be strongly impressed on the minds of all liveriesmen, and have only to express our hope that he will take the counsel of friends, and retire from the contest; should he adopt this course, it will relieve the Court of Aldermen from an irksome and unpleasant duty, and he may possibly then be allowed still to fill the magisterial chair, to wear the robe of office, and partake of civic hospitalities. With those who do not know him, the loss of the civic chair is of no importance, for they will not inquire the "whys" and "wherefores." Those who do know him, he must feel convinced will not think one "whit" the better of him, except such as may descend to partake of Mansion-house fare. Indeed, his election would be of serious evil to the corporation and city of London; for we fear that many would be too apt to look at the man and not the office. In such case, we can well imagine that the Mayorality would be one of the least expensive nature which has taken place for many years, if not quite unexampled.

## NEW MOTIVE POWER.

A communication inserted in the *Morning Courier* and *New York Inquirer* of the 21st of August calls the public attention to a new motive power, discovered by Dr. Drake. The object of the communication is stated to be, to point out its great advantages over the steam-engine, as an effective and cheap propelling power; to show that it is unquestionably an agent that must and will be brought into immediate use, not only upon the ocean, river, and inland, but in most or all of our workshops; and, from its very nature, being so easily and fully placed under control, without danger, and without loss of fuel, only when in actual labour—possessing such superior advantages, that it may, and no doubt will, be applied in a vast number of instances where steam cannot with safety or economy be introduced.

Its advantages over the ordinary steam-engine are thus set forth:—"Dr. Drake's agent leaves behind it the costly, dangerous, and bulky boiler, the condensing apparatus, as well as many other portions of a large steam-engine, together with the expensive funnels and smoke-pipe; it will also leave behind the hundreds of tons of coal, and in their stead will stow away a few barrels of oil, alcohol, or turpentine, as its fuel—scarcely encroaching upon the stowage room for freight; and 75 per cent. of labour in the single item of ship hands will be saved. By the use of this agent, the form of the ship may be changed, requiring no sailing appendages, but depending entirely on the efficiency of the engine. I board little in saying, that a passage will be made from this city to Liverpool in less time than seven days."

The communication concludes as follows:—"Without doubt, efforts are now being made to introduce this most valuable invention, immediately into England, as well as Europe."

We know not what the principles of this wonderful "agent" of Dr. Drake's may be, but if it is capable of achieving all that is here stated, it is certainly worthy of public attention.

NEW MODE OF RAISING MINERS, INCREASING VENTILATION, &c.—A patent has been granted to J. P. Smith, Esq., of Cork, for improvements in machinery, for lowering and raising heavy bodies in mines, &c., and also for obtaining more perfect ventilation. For this purpose a screw shaft is fixed in the shaft of the mine, which working in anti-friction rollers on the line, containing the heavy bodies, which is also fixed in solid properly arranged, raises or lowers those bodies as required; these screw shafts are set in motion by the steam-engine or any machinery used for working the mine, and the motion thus obtained through the whole length of the shaft may be applied in working a rotary fan or air-pump at any point where increased ventilation may be necessary, or for any particular machinery temporarily required at any of the levels.

NEW AND IMPROVED IRON ROOF.—At the cotton manufactory of Messrs. Gurnsey and Co., at Liverpool, a new patent roof is being erected, composed of cast and wrought iron, which for lightness and rigidity of appearance, combining strength and solidity, is perhaps unrivalled. The building, which is intended for the storage of cotton, is 120 feet long by 64 feet wide, the space of the principal being equal to the latter, so there are no central supports. These principals are formed of four pieces, looking into each other, and fastened with bolts and nuts, together weighing three and a half tons; they are immovably secured and perforated, forming a British elliptical arch below, and the wood straight pitch for the roof above. When the whole is correctly bolted and fixed together, it will be capable of sustaining a much greater weight than it will have to bear, and goods may be stored up to the very eaves; the rafters for the slates are of wrought-iron curved upwards, to give greater strength, while the whole is free-pipe. The spirited castings are from the Iron Foundry, belonging to Mr. John Clayton, Freeton.

## COAL AND IRON DISTRICTS OF THE UNITED STATES.

We have, on more than one occasion, directed attention to the mineral resources of our transatlantic neighbours, and the advancement made within the past few years in the Potomac district, by the application of Cramo's patented process for the smelting of iron with anthracite, which has, in a great measure, rendered the United States comparatively independent of supply from this country, and hence the continued—or, we might say, the increased—duty imposed by the American Government on the import of iron, whether in a manufactured state or otherwise. In thus protecting their home manufactures, and encouraging the outlay of capital, and the development of their mineral resources, we think they only pursue a prudent course, while the prosperity of manufactures must needs tend to the construction of railways, the opening of canal conveyance, and the removal of obstacles which impede the easy transit of goods—at the same time that it affords a demand for labour, and creates national wealth from its own resources. Would that our Government had as duly reflected on the importance to be attached to the mining interests of this country, when they resolved on the alterations in the tariff. This, however, is a sore subject, and we will, therefore, on the present occasion, allow it to pass by without further remark.

The American Government, as already observed, have, by their import duties, afforded a protection to the home capitalist and manufacturer, and hence the prosperity of several districts to which reference might be made. We are, therefore, not surprised to find that capital to a vast extent has been invested in locations which, at first sight, would appear to be so insulated as to hold out little or no prospect of benefit. We are led to make these remarks, from having lately had submitted to us the plan and reports of a mineral district situated in Virginia and Maryland, from which we gather that a vast region of coal and ironstone measures has been taken by parties, with the view of working, embracing no less than fifty-three feet of coal in a depth of 1150 feet, of which about fifty-three feet is said to be workable. It cannot be expected that we should enter into all the details with which we have been furnished, but having made some brief notes which may be considered as affording sufficient data on which an opinion may be formed of the vast importance to be attached to the mineral districts of the United States, we purpose giving them insertion in our next Number.

Having said thus much, it will naturally be inquired—What is the precise object we have in view in directing attention to the mineral resources of America? Our answer is simply this—first, to show to the ironmasters of this country that a gigantic rival is likely ere long to meet them in the field—that our foreign commercial relations will, and must, necessarily undergo a change—and, therefore, that it behoves them, at the present moment, when the iron trade is so much depressed, not to injure each other by competition, but to combine for their own advantage, and the interests of the country—dependent, as we are, on our manufactures, and which are, in a great measure, again dependent on our mineral resources. Coal and iron afford us the means of competing, and successfully so, with other countries in supplying, not only the machinery, but the means of working the same with advantage, and, should America be able to compete with us, we shall lose, if not our sheet anchor, at least one of our mainstays. But there is another motive which influences us—it is, that we have reason to know, at the present moment, active measures are being adopted to raise a capital in England to promote the interests of the coal and iron region of Maryland, and to this we would direct the attention of the English capitalist. If that all we have heard, and the documents which have been placed before us, can be fully and fairly substantiated, we doubt whether it be not politic to embrace the opportunity of securing the advantages held forth, for it is clear to us, that if the proposed measures with reference to the United States be carried out, the result cannot prove otherwise than as most prejudicial to the interests of this country. We have already said enough to excite attention, and shall gladly give insertion to the views of parties who may feel an interest in the question, for it is only by open discussion that we can arrive at the truth.

## AUDLEY MINES, COUNTY OF CORK.

These mines, or rather mineral tracts, extending over 4987 acres, were formerly in possession of the West Cork Mining Company, a small portion of them having been previously worked by the Mining Company of Ireland. The decrees in the proceedings instituted on the part of the family of the late Lord Audley, in which the directors of the former company were defendants, having had the effect of restoring the mineral rights—or, rather, we should say, of authorising a sale, in whole or part liquidation of the claims on the company by the representatives of the late Lord Audley, on behalf of the family—an order has been made for the same being submitted to public sale on the 20th of next month, at the Master's office in Dublin.

As the tract is of considerable extent, and embraces a large mining district, while the produce of the mines have yielded ores of great richness—although never worked to any extent—as well as slate, said to be of superior quality, we think it well deserving of attention; and, in placing before our readers the main features presented by the statement which has been drawn up, accompanied by plans and sections, with the view of putting the public in possession of the information collated from the reports of scientific as well as practical men, who have inspected the district, we are anxious to direct the consideration of the value of the mines of all matters passed by—which, however they might affect the individual character, or substantiate the charge of ignorance or apathy in their working, can have no reference to the value of the property, as taken *per se*.

We can very well imagine that certain of the property (for it is divided into lots) is well worthy of not only being fairly tried, but that there are several points which require only the application of capital and an honest and economical management to realise those advantages which, while they repay the capitalist for the investment he may make, will at the same time afford to the humble peasant the means of employment and the support of his "weak" family. If this latter were the only consideration, we should gladly lend our aid in directing attention to the mines; but, as we constantly believe much good is to be done, we hesitate not to give our assistance in presenting to the mining community the main features which the mines present, as we collect from the statement before us.

The property announced for sale comprehends, as we have already stated, a surface of 4987 acres, and embraces the ores of copper and manganese, extensive quarries of slate of a superior quality, having been also partially opened; the mines are, for the most part, situated near the coast, and have the advantage of proximity to shipping places.

We purpose to have given a more detailed statement of the properties, which are divided into twelve lots, but the press of matter this week necessarily precludes its insertion, and which must, therefore, stand over until our next publication, when we may have more to say on the produce of the mines of the Sister Isle.

PRESENT TO HER MAJESTY.—The advantages possessed by the patented India rubber shoe-clink in deadening any noise, and from its elasticity of tread, has led to the presentation, by Mr. George Walter, the patron, of a quantity of this material to her Majesty, through Lord Adolphus Fitzmaurice, for the purpose of covering the deck of her Majesty's yacht. It was forwarded last evening by the General Steam Navigation Company's vessel, the *Lord Liverpool*, and we anticipate having to report in our next its application to the intended purpose. Judging of its superiority over other descriptions of material, from the opportunities afforded of seeing it in use, we cannot doubt but that her Majesty will duly appreciate the advantages which the article presents.

GOLD-DUST.—The Russian journals give the following particulars relative to the progress of discovery of gold-dust, &c., in that empire. During the summer of 1843, the commencement of the mines of which was explained by five several expeditions commenced in each the deposits of gold-bearing sand, and one sent in search of precious stones. The former discovered twenty-two different beds of sand yielding gold, situated partly in new localities, and partly in the neighbourhood of the beds already in course of being worked. The whole of the sites discovered in that year amounts to a sum of 12,275,000 pds. of sand, yielding 14 pds. 30 lbs. 55 grs. of gold. In the mines of Ekimov was found a remarkable crystal of colourless topaz, valued at 1000 rubles; and, in the mine of Ussak, a lump of gold of the weight of 20 lbs.

CORRECTION RAILWAY.—The present amount of subscriptions is £2,000. The course of the railway has not yet commenced. We are happy to state that a communication has been received from the right hon. the Lord Secretary for Ireland, Lord Alton, in which, after giving his name as a subscriber for a number of shares, he kindly says—"I entirely concur in the opinion, that it is very important to the interests of Cornwall, that a railway should be carried through the county, and I shall be ready to do what I can to further the undertaking."—*Cornwall Gazette*.



## DATA FOR THE USE OF BLAST-FURNACE MANAGERS AT IRON-WORKS.—No. VIII.

[Mineral and Metallurgical Chemist, Reading, Wiltshire.]  
FURNACE MIXTURES, AND CONCLUSIONS.

In preparing charges for the furnace, the quantity of coke forms a sort of data to work upon, and which is uniformly one barrow, of 18 or 20 cubic feet (but at some works it is considerably more), or about 5 cwt. in weight, and the quantity of mine and flux are, from time to time, regulated so as to obtain a desired quantity or quality of pig iron. If it should be the object of an ironmaster to produce from the smelting process a result suitable for foundry purposes, or for being economically converted into tough bar or plate-iron, his furnace manager must be permitted to select the materials of his charge so as to obtain a dark grey pig, which can only be effectually and cheaply done by using such a mixture of mine and fluxes (supposing the fuel to be always of a good and uniform quality, and limestone the only flux) as shall leave, after the separation of the iron and oxygen, the necessary proportions of silica, lime, and alumina, to form, at the temperature of the furnace, a clear and colourless glass or cinde—namely, one of alumina, two of lime (not limestone, but it particularly observed, but coarse lime), and three of silica. As an example, take, say—

	lbs.	lbs.	lbs.	lbs.
Red-hot coke (calculated) ... 1000, containing 47% of iron, 50% silica, and 10% alumina.	1000	470	500	100
Grey iron ... 1000	1000	470	500	100
Black lime ... 1000	1000	470	500	100
This sum eight charges ... 8000	8000	3760	4000	800
Less coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800

[The oxygen of the materials is omitted in this calculation, and also whatever loss or other matter or matter they may contain, if in small quantities, for the reasons stated below.]

In the above mixture we should have, in the quantity of mine that would yield 2360 lbs. (say, one ton) of iron, 1778 lbs. of silica, and 697 lbs. of alumina; then, if we take the weight of silica as data, the quantity of alumina should, to be in the proportions previously stated as most desirable, be, in even numbers, 593 lbs.—consequently, in this case, we should have an excess of 184 lbs. of that earth, which excess should be neutralized by the addition of adjusting mine or fluxes, containing in the quantity used an excess of 312 lbs. of silica; the desired proportions of silica and alumina will then be obtained, and the quantity of limestone to be employed should be that which may contain of coarse lime two-thirds the whole weight of the silica, or twice that of the alumina, and which in this instance would be 1394 lbs. Let us, however, try another mixture, so as at once to reduce the quantity of alumina to the desired proportions—say:

	lbs.	lbs.	lbs.	lbs.
Red-hot coke ... 1000, containing 47% of iron, 50% silica, and 10% alumina.	1000	470	500	100
Grey iron ... 1000	1000	470	500	100
Black lime ... 1000	1000	470	500	100
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800

Here we should have 1616 lbs. of silica, and 628 lbs. of alumina, or a deficiency of 11 lbs. of alumina in the quantity of material required to yield 2360 lbs. of iron. In this case, the proportions of silica and alumina would be sufficiently near for all practical purposes; the quantity of lime, then, to be put at double the weight of alumina—namely, 1256 lbs., or limestone sufficient to yield that quantity of coarse lime, exclusive of what may be required to neutralize the silica and alumina of the limestone.

Again, say the mine employed consisted of—

	lbs.	lbs.	lbs.	lbs.
Black lime ... 1000, containing 47% of iron, 50% silica, and 10% alumina.	1000	470	500	100
Red-hot coke ... 1000	1000	470	500	100
Black lime ... 1000	1000	470	500	100
Coke ash ... 400	400	188	200	40
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800
Balance of coke ... 8000	8000	3760	4000	800

Now, if we take the alumina as data, we should, in this case, have an excess of 786 lbs. of silica; that, then, the weight of the alumina would be 1212 lbs., which should be the weight of the silica, to be in the proper proportions; but we have 1918 lbs. of that material, and, consequently, an excess as above observed of 706 lbs., which excess should be neutralized by adding adjusting mine or fluxes, in such quantities as may contain an excess of 253 lbs. of alumina, on the principle in question—the exact proportions of silica and alumina would then be obtained; and the quantity of lime should be determined in this, as in the preceding mixture, by adding as much limestone as may contain of coarse lime twice the whole weight of the alumina employed, or two-thirds the weight of the silica.

As it would be nearly impossible to adjust blast-furnace mixtures to such a nicety as to constantly obtain the exact proportions of silica and alumina desired in these papers (i.e., one of alumina and three of silica), the operator must be satisfied with as close an approximation to these proportions as the nature of his materials and the irregularity of his supplies may readily permit of—his principal object being, to give a slight excess in the alumina instead of to the silica, say, any weight of it under 20 lbs. in the whole of the earthy residues that may happen to be in the materials required to yield a ton of pig-iron, which excess of alumina may be easily and effectually neutralized by a slight increase in the weight of lime, say, of coarse lime twice the excess of alumina—for, in each case, it would be preferable to increase the dose of lime than to disturb the mine mixture simply for the sake of making so small an addition as 60 lbs. in the amount of silica; but should the silica predominate, say, to the extent of 60 lbs. or more, then the safest mode of proceeding would be, to increase the dose of alumina, by a reformation of the mine mixture, and then adjust the quantity of lime or limestone, in the manner above described.

It should be observed, that I have in the foregoing calculations presupposed that lime is the only flux employed, and that silica and alumina are the only earths which it may be necessary to remove in the smelting process, therefore, as I wish to make myself clearly understood, I beg expressly to state, that the principle to be constantly kept in view by a furnace manager is this—namely, to use as fluxes such materials as may, at the current temperature of a blast-furnace (whether with hot or cold-blast), cause the earthy residues of his mine, fuel, and fluxes to run into a clear and colourless glass or cinde, without the aid or addition of protoxide of iron. His results will then be everything he could possibly desire, and the working of his furnace be placed under complete control.

In the above calculations, I have refrained from taking magnesia into the account, for two reasons—first, because, in the general run of materials, particularly in this part of the United Kingdom, magnesia is seldom found in quantity sufficient to materially affect the blast-furnace process, unless "magnesia fluxes" should be used; for, although many coal seams, and some few iron ones, certainly contain portions of magnesia, it scarcely ever occurs in an extent amounting to 10 lbs. in the whole of the materials required to yield a ton of iron; and, therefore, normally, I have neglected to take magnesia, and also the small quantities of lime and manganese to be found in some mines (the calcareous iron mines of the Forest of Dean, of course, excluded in these observations), and likewise the oxygen, as being a waste of body, into the furnace mixture, in order to avoid an unnecessary complexity in the calculations. It is, nevertheless, desirable, that an iron master should make himself acquainted with the effect of small doses of magnesia, in comparatively large quantities of silica, lime, and alumina, at the temperature of a smelting furnace; because, from the infusibility of magnesia, per se, at the temperature alluded to, and its generally admitted property of rendering compounds of earths infusible that otherwise may be readily melted, what may be thought a very small quantity of it, may produce exceedingly surprising results in the process under consideration. Little danger need, however, be apprehended to arise from the amount of magnesia usually found in the mines and fuel of this neighbourhood; but, with regard to limestone, much caution will be required in their selection, for, should the magnesia therein be employed, either by itself, or in the form of carbonate (a substance which by which the proportion of ready iron-works have, not only as common fluxes, but in not keeping a regular and certain supply of silica of good and known quality for their furnaces, have lost both their credit and their capital), the most disastrous consequences would be sure to follow—viz., the furnace would be immediately put of order by the infusibility of the earthy residues (in order to effect to that previously described as the consequence of an excess of silica)—a large amount of coke, blast, labour, and other materials, would be needlessly consumed—much damage would be done to the hearth, and to the walls of the crucible and bottom of the furnace—and the iron obtained at this time would be greatly inferior from the purer yield of the mine, and it would be of the most inferior description as to quality, which quality could only be restored by the use of magnesia. The worst consequence, then, may be ascribed to the selection of limestone for application in the smelting process, and a furnace shall be made with, more carefully

speaking, until ironmasters will adopt well-known means of readily finding, at the temperature of an iron-furnace, and without the aid of protoxide of iron, earthy compounds, in which magnesia, or other earths, may, in quantity or effect, be found injuriously to prevail.

In concluding this series of papers, I beg permission to observe, that I have endeavoured to condense the whole process under consideration—or, at least, all the essential parts of it—into as few words as may convey my meaning fully and plainly, and of this I am quite sure, that by obtaining a proper analysis of his materials, and by attending to the principle I have endeavoured to enforce (viz., to select his mines and fluxes, so that the residuary earths shall readily fuse, at the usual temperature of a blast-furnace, into a clear and colourless glass or cinde, without the aid of protoxide of iron), any furnace manager may regulate his process so as, at all times, to obtain whatever result he may desire; this has always been termed an impossibility—at least, by all the smelters of what may now be termed, the old school—and, very probably, it will continue to be so considered, until the ironmasters will, as a body, hold out sufficient inducements to tempt individuals to properly qualify themselves, by a due course of education, for the important and responsible situation of blast-furnace managers.

## ORIGINAL CORRESPONDENCE.

## THE MINING INTEREST—THE "STRIKE," AND ITS EFFECTS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have perused, with much interest and attention, the letter of your intelligent correspondent, "R. W.," whose former labours, although misapplied, according to my notions, were, I have every reason to believe, duly appreciated by those whose battles he fought—I need hardly say, I mean the smelters; and who has the credit, as he well deserves, of being set down as a clever tactician. I will, Sir, with your permission, anticipate your editorial pen, by offering some observations on his letter, for I do not flatter myself for a moment that it will be admitted as a reply; however, I shall be happy to "joust," or "tilt a lance with him," in perfect good humour; at the same time that, I need hardly say, it will be my object to "unhorse" my opponent. Your correspondent, after rendering to you that mass of praise and justly due commendation, as you observe, so to mix up "the mine and the smelter," that I am not surprised you do not find it palatable. It is to be wished that I saw address you, and shall at once proceed to the consideration of the several points advanced by him. I most fully agree with the feeling expressed in the introductory part of his letter, as to the serious effect which the "strike" must have on those who are in no way connected with it, and who are, in a great measure, dependent for the means of subsistence on the smelter; and most gladly shall I hail the return of the workmen to their labour, whether on the terms of the proposed reduction, or such other as may form subject of mutual arrangement between the parties interested. I am equally sensible of the ill effects produced by example, but trust that the good feeling and good sense of the non-party and the other, will have the desired effect of bringing about a mutual understanding. Your correspondent would wish to appear desirous of evading a subject which he, doubtless, feels very sensitive upon—viz., the advocacy he displayed in support of the smelter at the time of the alteration in the tariff. He says, "You cannot mean the measure introduced by the Government (the tariff), because you say that I am ashamed to defend it!" and then proceeds to refer to the ticketing.

Now, Sir, I have more than once read the article to which "R. W." directs attention, and I must confess that I am "most considerably" startled, or the impression conveyed to my mind by your remarks is such as no one not disposed to quibble would naturally arrive at. "R. W." touches on the subject himself, although he says it is not at present his intention "to argue the question," and my belief is, that he never will—he has now to contend with facts; some sixteen or eighteen months since, when we were favoured with his communications through your columns, he had only to combat opinions, while I admit he was equally in such sense deserving attention. On subject, however, of ticketing, which he considers cannot be destructive of the mining interest, forthwith, because they have "existed for nearly a century," I hardly like to trust my pen in offering a comment. I am equally alive to the value of old institutions as your correspondent, but I cannot admit that to be good now, when its evils are rendered self-evident, simply because it has "existed for nearly a century"—equally might I be the advocate for preserving a ruined building, instead of repairing or replacing it by another edifice, preserving all that was good, and adding thereto those adjuncts which, while they added to its beauty or usefulness, detracted from its pristine value or property. Our electronic powers have been increased within the past few years, yet the Constitution is unassailable, as it is unassailable. But I am wandering from the subject.

"R. W." next says, that you designate the clique of the smelters (six in number) a monopoly—for such he says, "appears to him an odd term to apply to six companies who are competing with each other in the open market." It is very apparent the object of your correspondent is to mislead the reader, by inducing him to believe that there is such a thing as an "open market" in the purchase of ores at ticketing. I contend that there is no such thing. The price is in the hands of the smelter; he cannot withdraw his ore, but must needs take the "bid," and this will depend on the understanding which exists between the smelters, and the nature or quality of the ore which each requires, as constantly displayed in the ticketing papers—in which, indeed, it is only necessary to make reference. Your correspondent argues, that the Mining Company, who attempted to add the mine "against this monopoly," failed in doing so. Admitted; and to what cause is this to be attributed?—first, to the compact which existed between the smelters; next, the apathy displayed by the miners themselves. All connected with mines must be well aware of the coercive measures adopted by the smelters, on which it is not my object now to dwell—while the inference conveyed in "R. W.'s" letter is, he must admit, most ill-fated.

A company with a large capital, and honest purpose, undertake to represent the miners' interest, and, not meeting with support, your correspondent would ask them to sacrifice their capital, and retire from the field, so that his friends, the smelters, might have the field at their feet. Again, your correspondent says—"A monopoly is generally felt to be an injury to the consumer, by keeping up the price of the article produced—unfortunately for the miner, the reverse has been the case in this instance." Surely, "R. W." must be joking—but the subject is too serious for a joke. The monopoly, Sir, which exists, is that of the middle man—the smelter; he it is who takes advantage, by the monopoly which exists, to purchase the ore at whatever price he and his co-smelters may determine; while, as regards the trade—I apply the expression to the mercantile transactions which take place with the manufacturer, the smelter being the copper merchant—he has a certain power in his hand to command prices, except where the supply exceeds the demand—a natural consequence on the operation of the new tariff.

Lancaster, Sept. 7.

We are compelled, from want of space, to defer the concluding observations of our correspondent until next week, but consider it only due to "R. W." that we should avail ourselves of the earliest opportunity of giving insertion to the reply. We wish that we could impress on our correspondents the expediency of concentrating their ideas.

## BLAENAVON IRON AND COAL COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Your correspondent, "A Shareholder," who takes up the only line in favour of Mr. Dinkin, in your Journal of the 10th ult., has made some unjust remarks reflecting indirectly on some of the late officers of the Blaenavon Company. He talks about the "wreck" being "now managed" by "the former officers" and "gold for the ballast"—and a deal more trash—being the company "bankrupt," &c., &c., in fact, which, reckoning money as being worth 1 per cent., would be a return of 10 per cent. on the capital embarked. This might tickle some of a warm imagination amongst the shareholders, and induce them to "build their castles in the air," but would be considered by persons of common sense as being merely "foolish."

The Blaenavon Company underwent a change of management about six years ago (not five); the leading officers were not then "drifted out," nor were they five years since. The change took place at the latter period of a leading agent, in consequence of the resignation of a party; but "drifting out" had nothing to do with it. The drafting out of the experienced officers (and I mention amongst them those of the old as well as those who were engaged by the new company) took place about two years since—in some cases, perhaps, the company asked; but in others, no doubt, the furtherance of private interests, at the expense of deserving individuals. Among the "officers" then drafted out there were three whose characters, I am convinced, would bear as strict an investigation as that of Mr. Dinkin's; and whose experience, qualifications, and integrity were undoubted. I need not offend to Mr. Dinkin whatever. Change does not always imply improvement; and I do not hesitate in stating, that about the period I allude to (two years since) "improvement" was, in some cases, in my knowledge, put aside for improvement, at a considerable additional expense to the "shareholders." Shareholders, and to the gross injury of numerous individuals, of undoubted qualifications and of tried integrity.

"A Shareholder" should be sometimes better in showing and indicating against parties, and sometimes the facts of the case previously to making his statements. If he knew any individuals to be connected with the "ballast" on the right hand, and not implicitly parties to his reflections who are free from blame. Whatever were the faults of the management five or six years ago, disgracing the experienced agents was not one of them; certainly nothing, a single leading officer was disgraced. To thank Mr. Dinkin, for the anonymous statements of "A Shareholder,"

Blaenavon, Sept. 6.

A LOVER OF FAIR PLAY.

## STEAM CARRIAGES ON COMMON ROADS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Since the opening of the Liverpool and Manchester Railway, and the consequent complete conviction of the capabilities of steam-power to locomotion, numberless attempts have been made to propel carriages on common roads, and thus avoid the enormous expenses attendant on the formation of railways. Hitherto the attempt has been successful but in a very partial degree, and this failure has originated in their immense weight and bulk, the inequalities of macadamized or paved roads, and—from the constant and severe concussion—constant damage to the machinery. At the present time, when such universal, and, in a great measure, just, complaints are being made of the way in which most of the great railway proprietors are conducted, through their directors abusing the powers given to them by the Legislature, and converting what was intended for a general benefit into a monopoly of the means of transit and an engine of public oppression, for individual advantage; it will be satisfactory to that public to know that a company is about being formed by a body of highly influential men for carrying the principle of locomotion on common roads effectually into operation. I am not in a position to give you a description of the invention, but I am informed the works are light, compact, and powerful. It is proposed, under authority of Parliament, to lay down on one side of the present highway (which portion will be kept from general traffic) a timber track, on which the wheels are to run, the circumstances of which being shot with wood will prevent concussion, and the vehicles will travel with a much smoother motion than even on a railway. This timber track will not cost, including any necessary small cuttings through preliminary steep hills which may occur, on an average, more than from 800l. to 1000l. per mile, and, as the whole of the vehicles, machinery, &c., will be of lighter build, and consequently far less costly, a company with a comparatively small capital will be able to establish a line between any two termini, with a certainty of ample return for their investment, at one quarter the present railway fares, and at the same time confer a benefit on society at large.

Having received this information from a gentleman who could not enter into detail on the subject, allow me to draw the attention of any parties who may be interested in this important undertaking to Beale's rotary engine, which I am satisfied might be applied to locomotion with certain success—its extraordinary power, in proportion to its pigny dimensions, and the diminutive size of that gentleman's patent boiler, render it peculiarly suitable for the purpose; and, unless the inventor has succeeded in surpassing this in those indispensable qualities, power and small compass, the application of Mr. Beale's patent by the new company will be well worthy consideration.

The prospectus will be issued in a few weeks, and application will be made for the sanction of Parliament in the ensuing session. A powerful opposition will, no doubt, be raised against it by the railway companies, but the public advantage must be considered paramount to all individual interests—and, eventually, it will succeed.

Baker-street, Portman-square, Sept. 13.

ANTI-MONOPOLIST.

## WOOD PAVING—PATENTS AND PATENTERS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I noticed in your valuable Journal of last week the trial relative to the infringement of Mr. Stead's patent for paving streets with wooden blocks, and am surprised at the obscure manner in which the verdict appears to have been recorded—the plaintiff evidently running away with the idea that he had secured a complete monopoly of all wooden pavement, and that the forty also unfortunate who had taken out patents on the faith that his specification was for form only, and not the material, might sit down content with the injustice done, and throw up the field to him. Any one who heard attentively the summing up of the judge was aware the verdict was against the complainant for having the hexagonal blocks, and not against the Metropolitan Company. To entirely, however, set the matter at rest, the opinion of the Attorney-General has been taken on the subject, who distinctly affirms, the verdict has no effect on the Metropolitan Company—Stead's specification, on which the trial was founded, laying on shadow of a claim to wood as a material for paving, but claiming three distinct shapes of blocks—viz., hexagonal, square, and triangular, not one of which are used by the company.

Obvious and as just as the patent laws truly are, it would be a little too glaring to allow forty also individuals, during a period of six or seven years, to pay large sums of money for patents, when one had been previously granted which would prevent their use, and yet kept from their knowledge—and, just as two or three of the most valuable were beginning to develop themselves, the owner to step in, and, taking advantage of all that had been done, monopolize the whole. Mr. Stead, it is to be hoped, for his own sake, will see clearly the error into which he, and I should suppose, his attorney, by some unaccountable oversight, have fallen, and rest satisfied with the forms of blocks secured to him, with the use of which I wish him success.

Hackney, Sept. 9.

A CONSTANT READER.

## WOOD PAVING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—An abstract and somewhat report having been circulated that Mr. Stead has obtained a verdict against the Metropolitan Wood Paving Company for infringing his patent, which gives him the exclusive right to lay down wood paving, (see to state that such a report is totally false. Mr. Stead obtained a verdict against the Metropolitan Company—the surveyors of Manchester having laid down some of the company's blocks, and some of Mr. Stead's hexagons, he obtained a verdict against them for the latter set. Had he had the slightest claim against the company he would, of course, have proceeded against them long ago, and not against the surveyors of Manchester at this late hour. The following decided opinion of the Attorney-General will, however, show whether Mr. Stead had any exclusive claim or not.

"I am clearly of opinion that Mr. Stead has not the sole and exclusive right of using wood as a material for paving—his own statement of his invention in the specification is, that it is 'a mode of paving by means of wooden blocks cut or formed of similar dimensions,' and the only terms he claims are hexagonal, triangular, and square; there is no claim anywhere of wood as a material, and independent of form, nor any pretence, in my opinion for making such a claim."

Any man of common sense, referring to Mr. Stead's specification, will be able to judge for himself.

I am, your obedient servant,

W. FURNESS, Junr.

Secretary to the Metropolitan Patent Wood Paving Co.

## WOOD PAVING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Finding that the Metropolitan Wood Paving Company are in various shapes infringing on the public that their blocks are not an infringement upon Mr. Stead's patent, and exhibiting an consciousness which is not intelligible if they were so clearly in the right as they are considered to be in connection to that effect, I beg leave to say, in reference more particularly to a letter of Mr. Furness's, in your paper, containing an extract from Mr. Furness's opinion, that Mr. Stead's patent, containing the opinion of Mr. F. Pollock that his claim covers wood paving with hexagons, squares, and triangles, and all shapes that are formed merely as imitations and evasions of Mr. Stead's invention. The blocks of the Metropolitan Company are squares at the bottom, and are of similar size to hexagons, and Mr. Stead is advised, as will be hereafter proved, that a mere difference in the vertical sides of a block is an evasion of his patent, provided the surfaces of paving correspond with his description. In addition to Mr. F. Pollock's opinion, Mr. Stead also presents the opinion of Mr. D. Pollock, that if other parties than Mr. Stead had patents for using wooden blocks with an irregularity in their vertical sides, their use of square blocks, as appearing on the surface of the road (which is the case with the Metropolitan Company's blocks), would be an infringement of Mr. Stead's first patent. Mr. Stead was, in an opinion given to Mr. Stead, stated that such patents as are made of blocks, each resembling the other, would be considered infringements, and that the Metropolitan Company's blocks come within this category, and that the only evidence of infringement required would be that the blocks comprising the pavement were alike in shape and dimensions.

Mr. Campbell, the well-known patent agent, who, in September, 1841, states, in reference to Mr. Stead's patent, as follows:—"I am of opinion that it includes any and every regular form of wood blocks."

It is desirable that the public should have information on the subject of the questions of patent and non-patent judges regarding the wood pavement patents, I trust it may be assumed to be a matter of common knowledge to Mr. Furness's opinion, that which the Metropolitan Company claims, but it would be greatly profitable that the Metropolitan Company should quietly await the adjudication of the courts of law and equity as to their blocks being infringements or not on Mr. Stead's patent, because they may depend upon having an opportunity of discussing the question exactly at the period which suits Mr. Stead, but they must not hurry him.

I am, Sir, your obedient servant,

W. FURNESS, Junr.

Secretary to the Metropolitan Patent Wood Paving Company.

## WOOD PAVING.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The following opinion and letter of Mr. Campbell, reader any further correspondence with Mr. Stead and Mr. Furness respectively.

I am your obedient servant,

W. FURNESS, Junr.

Secretary to the Metropolitan Patent Wood Paving Company.

1. Mr. Stead is requested to permit Mr. Stead's specification of November, 1840, to be read to Mr. Furness's, commonly called the Metropolitan Patent Wood Paving Company, and to show—

1. Whether he considers Mr. Stead's patent valid?

2. If he is right, whether it gives him any claim against the Metropolitan Company?

3. I am of opinion that Mr. Stead's patent is not valid. The previous prohibition in the Statute of the Society of Arts, and the previous use of wooden blocks of the shape and to the manner described by Mr. Stead's specification, in my opinion, renders the patent void.

4. I have recently considered the specification of Hodgson's patent (the patent worked by the Metropolitan Company), and I am of opinion that the use of the hexagons described under that patent in any way infringes Mr. Stead's patent.

5. Enclosed I send, Sept. 13.

6. I am, Sir, your obedient servant,

7. W. FURNESS, Junr.

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# THE SAFETY LAMP.

The following is a translation of a pamphlet, published at Brussels (for which we are indebted to our contemporary, the *Gefachend Observer*), containing practical instruction for the employment of the safety lamp of Mueseler—published by order of the Minister of Public Works:—

The beautiful invention of Davy was only made known as recently as the year 1815. Received at first with distrust, it was soon afterwards considered as an infallible preservative against the inflammation of fire damps. This blind confidence, and the remission which followed, became the source of such unfortunate events, that we have a right to demand whether the lamp of Davy has been for the working class in mines that which its inventor desired—an apparatus of safety and of conservation. The reply to this question, if we consult the elements of the statistics of mines, will be, unfortunately, in the negative. A serious study, instilled by numerous disquisitions, has already made known defects, even in the lamp of the learned Englishman—imperfections which have hindered his apparatus from completely attaining the end for which it was proposed. We will take a rapid view, finally to appreciate the importance of the perfection which M. Mueseler has conveyed to his lamp.

## THE IMPROVEMENTS OF THE LAMP OF DAVY.

1. The principal inconveniences which the lamp of Davy presents, are:—  
In an explosive mixture of atmospheric air and pure hydrogen gas, the flame passes through the metallic tissue. There is also a foundation for fear that the same phenomenon occurs in mixtures of gases, such as we meet in mines, which are not only varied in their nature, or of which we had no previous knowledge.
2. The flame of explosive mixtures of gases may pass outside the wire cage in rapid currents of air, such as are accidentally experienced in doorways, in narrow passages, as well as in the common galleries of mines.
3. The least collision, which may displace or enlarge only one mesh of the wire gauze, will render the apparatus ineffective.
4. The wire gauze in contact with the oil lamp is sometimes loaded with a combustible paste, formed of soot and coal dust, which may be kindled within the metal frame; and, under certain circumstances, the flame may pass outside the wire-gauze cage. This paste may also cause a hindrance of the atmospheric air from reaching the flame of the oil lamp, or it may sensibly alter the quality of the light. Besides, the presence of oil upon the wire gauze causes the pitman to take a direct method of removing it by the agency of fire, and thus the gauze becomes deteriorated, and is soon rendered unserviceable.
5. When inflammable gas flows into the lamp, it sometimes continues to burn with great intensity, even after the flame of the oil lamp is extinguished, and thus disfigures the gauze, and frightens the pitman at the very moment when cool courage is most needed. In this way, explosion of the mine may take place, either by the rapid movement of the lamp, or by the pitman blowing into the wire gauze cage to remove the wick of the oil lamp, or by his attempting to extinguish the fire-damp in the wire cage by covering it with his clothes.

## II. DESCRIPTION OF MUESLER'S LAMP.

The essential disposition of this lamp refers to the manner in which the atmosphere enters the lamp for the support of combustion. The air passes downward to the oil lamp through two tubes of wire, arranged at a right angle, and finally escapes with the products of combustion by a central chimney. The construction of this new lamp has already undergone in detail several modifications, and is now arrived at the following arrangement:—

The principal parts of which this lamp is composed are as follow:—1. The oil lamp; 2. The glass which surrounds the flame of the oil lamp; 3. The cylinder of metallic tissue which is placed above the glass; 4. The horizontal wire composed of metallic tissue, which also rests upon the glass, and is attached to the central chimney, which it surrounds; 5. The cage, which binds all parts of the lamp together, and protects it from external violence.

## III. ADVANTAGES OBTAINED IN USING MUESLER'S LAMP.

1. The property of extinguishing itself when there is an abundance of explosive gas renders this lamp, even in a mixture of air and pure hydrogen gas.
2. The glass of this safety lamp intercepts only a very small quantity of light.
3. Rapid currents of air, so far from influencing the flame in a noxious manner in respect to safety or brightness of light, give an increased combustion, and consequently augment the circulation of air in the galleries of the mine.
4. The metallic tissue, being at a distance from the oil lamp, only receives the dry coal dust which is raised up with facility, and thus there is no necessity to have recourse to fire for cleansing the wire gauze or metallic tissue. Besides, the wire gauze in this lamp does not become so readily deteriorated as in the ordinary lamps. The wire gauze in this lamp is so arranged as to prevent all danger, one part of it is placed horizontally in the interior, and completely sheltered, and the deterioration of the other part does not change in a sensible degree the purity of the lamp.
5. The flame being little influenced by currents of air, the wick of the oil lamp may be more readily trimmed, rendering the combustion more uniform—and thus the waste of oil is prevented.
6. The superior light which this lamp affords permits it to be placed at a considerable distance from the workman—and thus it will not be liable to accidents from the pitman's touch, or from falling from coal or from stones.
7. Coal dust never so obstructs this lamp as to render it unserviceable, as with the ordinary lamp.

## IV. REAL OR APPARENT INCONVENIENCES OF MUESLER'S SAFETY LAMP, AND THE CASE WHICH IT REQUIRES IN USING IT.

1. It is more complicated. This new lamp requires more care and greater expense than the ordinary lamp. Its price is never more than seven francs, and it is probable, when larger quantities of lamps are required, the price will be diminished.
  2. The most sensible inconvenience experienced in the use of this lamp occurs when it is placed for some time in a horizontal position, or much inclined to one side. In the hands of an inexperienced workman the light will be extinguished. This effect never occurs when the lamp is carried by the ring at the top in the hand, or suspended at the workman's girdle. Thus it is, the workman is obliged to use much precaution in the management of this lamp. If it is inadvertently inclined, combustion may be restored by blowing in the direction of the wick through the metallic tissue or wire gauze.
  3. The shade produced by the intermediate circle in the wire gauze cage, and the necessity of maintaining this lamp as nearly as possible in a vertical position, generally causes less light to be thrown upon the roof of the mine.
  4. The lamp may also be extinguished in a rapidly ascending current, such as takes place in collections of air. When pitmen are obliged to remain in such a current, they must wear of this difficulty, by placing upon an inferior level on the top of the chimney, and from the wire gauze, a circular cover, of parchment or of wood, so as to turn the air, and to force it to pass upon the wick of the oil lamp.
  5. The fragility of the glass, which at first appears to be a serious obstacle to its employment in this lamp, does not in reality present any inconvenience in a practical point of view. We need not fear, in fact, the different causes of damage to which this glass appears to be exposed, whether from blows, from the projection of cold water, or from the sudden action of a current of cold and humid air; whilst the resistance of glass is acknowledged to be infinitely superior to that which wire gauze presents, and in this respect it affords a greater security, as the cause of rupture is decidedly more rare; and never have the causes of rupture been such as to afford a direct passage of air inwardly—always, on the contrary, the fragments remained in their place until the period at which the lamp was repaired.
  6. The weight of this lamp is, in respect to the common lamp, as 2 lb. 11 oz. to 1 lb. 6 oz.—which, at the outset, is a subject of repugnance to the workman, but usage soon renders this inconvenience altogether insignificant.
  7. The apparatus indicates with less facility than the Davy the presence of explosive gases. It is only needful to diminish the wick, and to convey the lamp in a gentle manner to that part of the mine infected with fire-damp, and then to cause the flame to appear on the surface of the wire gauze.
- In the free-damp of the mines in the vicinity of Liège, the labour is organized so as greatly to facilitate the usage of this lamp. Each cutting or board is commanded by a chief (see guard), whose duty it is to place the lamps upon benches, fixed upon stay ropes at convenient distances, and out of the reach of partial falls of masses of coal or of rocks. This individual also, when needed, carries the lamps in front of the boards or cuttings. One of the most important conditions in the employment of these lamps, is their maintenance in a perfect state of cleanliness. If this be not attended to, the lightness of the flame of the oil lamp will be diminished, and extinction will frequently be the result;—an observation of the passages in the wire gauze tissue, and the glass will be facilitated by the soot resulting from low combustion. The glass may be cleaned by a piece of dry linen, with either powdered charcoal or lime; and it is only needful to touch upon the wire gauze, and afterwards to brush it, so as to remove the soot and soot. Finally, the interior ring of the wire gauze may be cleaned every day, and the wick trimmed every week. It is also needful to keep in a clean state other parts of the lamp, including the wire tube, and, above all, the chimney, when there is a deposit of soot. We have learnt from experience that, at least, time is required for cleaning two lamps of Mueseler as three lamps of Davy.

## V. CONCLUSION.

It results from direct observations, that if the lamp of Mueseler require to use respect, compared to that of the Davy, were exposed in the first instance, some more workmanship for turning it to repair, and a more minute attention in its employment, it presents, upon the other hand, greater economy:—

1. By requiring less repairs.
2. By the small quantity of oil which it consumes.
3. By the brightness of the light which it throws upon the works.

Without doubt these considerations ought to induce to engage the managers of coal mines to make use of this lamp, but there is another powerful advantage, which governs all questions of interest, and which does not allow of hesitation in cases in which two lamps are available—viz., the advantages which the judicious employment of this lamp affords in respect to safety.

It is a singular fact that our respected correspondent, Dr. Clancy, of Sunderland, had discovered the principles of Mueseler's lamp by a series of chemical experiments, and brought it into use two months before the latter gentleman, without either knowing that both of them were pursuing the same investigations; he has also brought it to such perfection that it weighs 7 oz. less than Mueseler's, and the wire gauze has 112 more apertures to the square inch, and in the report of the South Minster Committee for an inquiry into the causes of accidents in coal mines, they recommended Dr. Clancy's lamp in the following words:—"In principle and operation it is infinitely superior to any the committee has put forward." We have given the translation at length, to show the warm interest which the executive on the continent are taking in relation to whatever tends to the support of the mining interest, and the welfare of the mine, while in relation to the lamps in question, though every mine is due to M. Mueseler for his discovery, who had no means of knowing that Dr. Clancy had been actually engaged in the formation of a lamp based on the same principle to his own, and which we have no hesitation in saying, from the general testimonials in its favour, and particularly from the evidence adduced before the South Minster Committee, that Dr. Clancy's lamp possesses advantages in point of brilliancy of light, less lighting to accident, and greater safety than any which have gone before it.

# MINING CORRESPONDENCE.

## ENGLISH MINES.

### ROTALACK MINING COMPANY.

Sept. 12.—Account held on the mine of costs and receipts for May and June:—  
To—By wages, 1240. 2s.—Merchants' bills, 400. 2s. 2d. 4100 12 2  
By balance in pursuer's hand last account, 4794 19 10  
Copper sold June 8 and July 12, 4407 4 2  
Deduct dues, 262 12 6—4349 13 8  
Tin sold, 11712. 2s. 1d.—Deduct dues, 246. 11s. 2d.—1112 12 10—4447 6 4  
Leaving a balance of profit of 4736. 14s. 2d.—from which deducting 4500, for dividend declared this day, a balance is left in pursuer's hand of 236. 14s. 2d.  
P. S.—The whole of the ore pitches at the last setting were taken, on the average, at about 1s. in the lb.

### BOLMOUTH MINING COMPANY.

Sept. 11.—In the 110 fathom level, on the south side, west of Gildesworth's winn, the lode is one foot wide, and worth 10s. per fathom; on the north side, west of this winn, the lode is fourteen inches wide, producing good stones of ore; east of the winn, on the north side, the lode is sixteen inches wide, and worth 20s. per fathom. In the 100 fathom level, west of Hitchins's shaft, the ground is still disordered by cross-courses; the lode in the eastern slopes, in the back of this level, is eighteen inches wide, and worth 35s. per fathom; in the western slopes on lode taken down since last reported; in the cross-cut south of Wall's shaft, towards the Flagjack lode, the ground is hard for driving. In the sixty fathom level, west of Hitchins's shaft, the lode is small and poor; in the eastern slopes, in the back of this level, the lode is fifteen inches wide, and worth 10s. per fathom; in the slopes east of Hitchins's shaft the lode is two feet wide, and worth 6s. per fathom; in the slopes west of ditto, the lode is sixteen inches wide, and worth 25s. per fathom. In the eighty fathom level, east of Wall's shaft, the lode is eighteen inches wide, producing good stones of ore; at this level, west of Hitchins's shaft, the lode is small and poor; in the cross-cut south the ground is favourable for driving; at this level, east of the great cross-course, the lode is one foot wide, and worth 14s. per fathom; the north lode, at the eighty fathom level, is without alteration. In the deep adit level, east of Lady Bram shaft, the lode is fourteen inches wide, composed of capel, spar, and ironstone. The pitches are much improved. T. RICHARDS.

### CONSOLIDATED TRETTEL MINING COMPANY.

Sept. 11.—The lode in the fifty fathom level, west of Henwood's shaft, is also inches wide—good tribute ground. The lode in the fifty fathom level, east of Henwood's shaft, is six inches wide—tribute ground. The lode in the forty fathom level, east of Henwood's shaft, is fifteen inches wide—tribute ground. The rise in the back of this level, east of Henwood's shaft, is noted. H. WILLIAMS. J. MONROE.

### CALLINGTON MINING COMPANY.

Sept. 11.—At the north engine shaft we have sunk about 4 fms. 3 ft. below the sixty fathom; at this level, driving south, the silver-lead lode continues to look well. At the fifty fathom level, driving south, the lode is about ten inches wide, producing silver-lead ore. In the forty fathom level south the lode is unproductive. The fifty fathom level east on copper lode the lode is one foot wide, composed of peach, muddle, and capel, with spots of copper. The twenty west on Trevelan's lode, is without alteration. Our tributors are working with spirit, and earning wages. At Hurlown adit the ground continues favourable for driving. At the south mine the engineers, carpenters, masons, &c., are actively engaged in getting the engine, with other necessary works in order; our heavy work is all fixed. J. T. PHILLIPS.

### CONSUMERS MINING COMPANY.

Sept. 11.—We find the lode in Murray's engine shaft, sinking below the sixty fathom level, one and a half foot wide, yielding a little lead; the ground is favourable. In the winn sinking below the sixty fathom level, on the north side, we are passing through good ore ground. Chiverton lode, in the seventy fathom level, is large, and producing some good stones of lead; this level is now extended as far west as the winn sinking from the sixty, and we shall now commence to rise under the same to effect a communication. In the sixty fathom level, west of Murray's shaft, we are cutting north to see the north lode. The lode in the slopes, at the sixty fathom level, has a good appearance, worth, in some places, 80s. per fathom. We shall sample on Friday next about fifty-eight or fifty-nine tons of silver-lead ore. J. WEBB. R. ROWE, JUN.

### UNITED HILLS MINING COMPANY.

Sept. 11.—In Williams's engine shaft the lode is three and a half feet wide, producing some good stones of ore in the north part. In the twenty fathom level, east of Williams's shaft, the lode is three and a half feet wide, two feet one of fair quality; in the seventy fathom level, west of ditto, the lode is four and a half feet wide, eight inches on the north part good ore. In the sixty fathom level, east of eastern shaft, the lode is two and a half feet wide, producing but little ore. In the sixty fathom level, west of diagonal shaft, the lode is four feet wide, ore of average quality. In the sixty fathom level, east of James's shaft, the lode is five feet wide, very thorough, but not rich; west of ditto the lode is three feet wide, very thorough, but of low quality. In the sixty fathom level, east of Nettie's winn, the lode is five feet wide, more in quality. In the winn, sinking below the sixty fathom level, the lode is three and a half feet wide, eighteen inches on the north part good ore. In the fifty fathom level, east of eastern shaft, the lode is three and a half feet wide, two feet good ore; in the winn, sinking below ditto, the lode is two and a half feet wide, nine inches ore of good quality. In the slopes, back of sixty fathom level (James's shaft), the lode is six feet wide, very thorough, but not rich. When Sparrow—in Gibbons's shaft the ground is rather harder for sinking. In Turner's shaft the lode is four feet wide, two and a half feet ore of average quality. In the cross-cut at ten fathom level an attraction. At the twenty fathom level, east of ditto, on Stanley's lode, the lode is two and a half feet wide, producing but a small quantity of ore; in the winn sinking below ditto the lode is two feet wide, ore foot ore of good quality. W. RICHARDS. N. LANGDON. S. H. FRANK.

### TRELLIS CONGLO MINING COMPANY.

Sept. 11.—The eighty west of Christie is split in branches, and disordered by an vein. The eighty east is kindly, and producing good stones of ore. The seventy east is two feet wide, promising. The sixty east is three feet wide, muddle, spar, and ore. The fifty east is three and a half feet wide, worth 30s. per fathom. In Good Fortune shaft, sinking below the fifty, the lode has a kindly appearance, and producing good stones of ore. The fifty east is one foot wide, worth 4s. per fathom. The fifty west is worth 4s. to 10s. per fathom. The thirty-four west is two feet wide, with good stones of ore. The twenty west is two feet wide, worth 4s. per fathom. W. SYMONS.

### WEST WHARF JEWELL MINING ASSOCIATION.

Sept. 11.—The eighty five east, on Wharf Jewell lode, is worth 6s. per fathom; we have not a large quantity of water here in the last few days, which we regard as a favourable circumstance for ore. The lode in the eighty-five east has not been taken down since our last, but the ground is more favourable. The winn in the bottom of the seventy west is much improved; it is two feet wide, worth 30s. per fathom. The winn under the seventy east is worth 30s. per fathom. The seventy east, on new lode, is worth 4s. per fathom. We have not taken down the lode in any other part of the mine since our last. We shall sample to-morrow about 100 tons of ore. S. LEACH.

## FOREIGN MINES.

### CHAMPAGNE MINING COMPANY.

Sept. 11.—Despatches from this morning have received from the manager at Chagny, up to the 17th May, accompanying the mining captain's report for the month of March, of which the following are extracts:—

Chagny, April 25.—At San George Mine the lode, or vein, in the deepest part, and where we are still sinking, is large, and I think there are sufficient reasons to urge us to go in pursuit of silver at a greater depth, seeing the adjoining mines have yielded large quantities of silver considerably below the level we are now working at. In the twenty fathom level the lode has improved in size, and has a far more promising appearance than for some time past; but, as a few days only have passed since this change has taken place, I can say but little for the present. In another part of the mine, where we commenced sinking about the middle of March, the vein presented indications of a favourable alteration, and the result has been somewhat encouraging, having extracted, in the course of the month, two tons of silver ore, and we still have silver in sight. At St. Andre the lode is still large, and has presented a very similar appearance for the last three years; but, hitherto, that much desired alteration has not taken place. In another part, where we are driving on the same vein, we have so far looking ground as ever I saw, producing all the qualities that would cause us to indicate our being in the vicinity of silver, but time and perseverance alone can determine. At Pangea Mines we have driven the long or adit level and a great many footings through a large vein of argentiferous ore, without having met any considerable alteration. The lode in the end has much the same appearance as for some time past; we are still sinking under this level, and have so far, hitherto, with few exceptions, no very good reason to see, composed principally of a pretty green ore as it were, but, and surely the whole of which will yield 30 ounces of silver per ton; as we, when we consider the strength and composition of this lode, I think there is a practical mine, either in this country or in England, but would not attribute the great magnitude of being simply restricted in depth for the silver, but it has much greater than 10, or that will be required to prove it. On the other hand, where we have commenced driving a lode, they hold great ground, and I have no doubt that, by persevering a few months, I shall have a more pleasant task in reporting to you the state of Pangea Lode than I have this day.

At the Quebeada Mine everything has been carried on with the greatest spirit and regularity, and with but very little change in the appearance, except in the bottom level south, where the quality of the ore has no altered in the last month, that notwithstanding we have, what in England would be called a large and rich bunch of copper ore, being four feet wide, and I have no doubt of more than 10 per cent, yet but a very small quantity can be extracted as fit for shipment, which in conjunction with the north bottom and being entirely unproductive, accounts for the falling off in the produce of last month, but we have reason to hope that in the south end, as we advance, the quality of the ore will greatly improve as in the level above, and further south of our present position, in the bottom level, there was an excellent course of ore of superior quality. At Chilo Mines we have been pushing hard, in order to communicate the new shaft in the eastern part of the mine, and which will, I trust, be completed before the end of May, to a level where we have driven through a vein of good ore, of rather more than ten fathoms in length; we have only one man working on it, so it is possible to increase our force in that part until the said shaft is holed. The end is still producing good ore, but the rich part of the lode is not so large as it has been. In the western part of this mine we are also extracting some very good ore, and have very strong hopes of being able, in the course of a month or two, to increase the produce without much additional expense. The two extremes, east and west, seem to be opening new and pleasing prospects, and I do hope that we may see Chilo resume her former character, and yield a produce equal to the best of her bygone days. The produce of Quebeada Mine in March was 31 tons, and that of Chilo 30 tons—total, 138 tons.—[The Unloaded was loaded and ready to sail for Swansea on the 17th May with 400 tons of copper ore; she may, therefore, be daily expected.]

## ALLEN MINING ASSOCIATION.

Sept. 11.—The gallant Allen has arrived with a cargo of 71 tons of refined copper, and by her has been received the following report:—  
Allen Copper-Works, August 12.—Our mining operations have undergone little change since my return by last post.

Rogues Mine.—You will perceive that the produce of this mine continues pretty regular, and no particular alteration has taken place in the workings, with the exception of No. 2, the level at the ten fathoms, which at a distance of about nine fathoms from the old workings, in a north-north-west direction, has assumed a very brilliant appearance, a new lode having been cut of rich purple ore, about two feet in size—and, being entirely in virgin ground, encourages us to hope favourably of this discovery.

United Mines.—The stamps under the eighty fathom level continue to yield their average produce, although the estimate for July is low, owing to the discharging of the coal vessels having occasioned a further interruption of work during a part of the month.

Wilson's Lode.—The workings to the westward are looking somewhat more promising, and, as the lode in the level appears to be dipping at the same angle as the mountain, we have better hopes of its permanency.

Rogues Lode.—The new working has undergone further improvement both in size and quality of ore, and has every appearance of becoming a permanently productive lode. Another opening has recently been made on a lode situated lower down on the mountain, which has also a very kindly appearance. The old workings fully maintain their character.

Inner Stream Lode.—This working, although at present very irregular, is yielding good ore in bunches, and we are in hopes, as we advance further, the lode will become better defined.

Ore Dressing.—Although I am unable to detect any neglect or mismanagement in this department, the per centage does not come up to my expectations, and I can only account for it from the large portion of muddle which the ore from the United Mines appears to contain, as compared with last year. In other respects, the progress of the work is satisfactory. CHARLES KNOTT.

## LEAD MINES IN DERBYSHIRE.

For some years past the lead mines in Derbyshire have been in a neglected condition. The adventurous spirit of the different mining companies has lately been in a very inhospitable state, which may be attributed to two causes—viz., the apparent poverty of the mines, and the heretofore low prices of lead. The expenses of working a mine is a very great and important undertaking, and, unless the proceeds are nearly upon a par with the outgoings, great losses are soon incurred by the proprietors. In many instances the mines are supposed to be worked out, or what the miners term "gone blind," the value of which, having heretofore been plentiful and rich, have quite disappeared. Nevertheless, those masters who are imbued with the spirit of adventure will often continue the search for traces of the lost mineral, and in many instances, after a long and expensive trial, their efforts will be crowned with the most complete and perfect success, and the works prove full as rich and beneficial as heretofore, the results often realising fortunes to the proprietors, and likewise large sums of money to the workmen—and this often done in a short space of time. An instance of this kind occurred only a few months ago, in the district of the High Peak. A lead mine, situated in the neighbourhood of Winstan, called Portaway, was considered nearly as useless, being supposed not to contain any lead ore worth working; however, some few workmen, who were still employed at this nearly deserted adit, accidentally struck upon a rich and plentiful vein, which now yields abundance of ore—these being found, in following the vein, enclosed in fissures of the rock, large lumps, of nearly 1 cwt. each, which, upon being slightly touched with a tool, fall upon the ground, nearly under the feet of the miners—and will, on smelt, from present appearances, prove a fortunate venture. The ore, when got, is broken up, and measured by a standard measure, called a "dish." The Queen claims a right to all the lead ore in what is called the Queen's Field, in the headlands of High Peak and Wirksworth. The Duke of Devonshire and Mr. Arkwright, as lessees of the Crown, are entitled to every tenth dish, which is put aside for the lessees by an official person, called the "bar-master," who superintends the measuring for that and other purposes.—*Doncaster Gazette.*

## MINING LYRICS.

One thought he saw a tunnel through  
The centre of the ball,  
To test of our antiquaries,  
Eight thousand miles, not all!  
Oh, what a whirling telescope!  
Through which to see the stars,  
Where mountains, too, may work in mines,  
Or hit with words and wars!  
He thought he felt that tunnel down,  
To reach the other side,  
Thence back to earth, it is a pendulum,  
On central line to ride.  
His spirit flew again "to green,"  
For mind alone was free,  
And gave to other eyes the power's  
The heights and depths to see!

ALFRED T. J. MASON.

\* *Op.*—Unless the atmosphere remains, would not the centrifugal force of the earth's diurnal rotation cause a vacuum at the centre of such a tunnel?

## MINE ACCIDENTS.

Trevelan Mine.—On Thursday, the 14th ult., at the time of changing the afternoon "crops," Peter W. Jones, a lad about fourteen years of age, was ascending by the "new engine," when, making a false step, he fell a depth of twenty-eight fathoms, and was so much injured that he died in a short time after having been brought to the surface. This is the first accident which has occurred with the machine, and is solely attributed to the carelessness of the unfortunate youth.

Accident from Lightning in Parkmoor Mine.—On Saturday morning, the 15th ult., as three men, named Thom, Bennett, James Bennett, and Richard Howard, were at work in the shaft of Parkmoor Mine, about 110 fathoms below the surface, during the thunder storm which then prevailed, they were all struck by the electric fluid, and, for a short time, were deprived of their senses, but, happily, without receiving any further injury. It is supposed that the lightning struck the stone, and was conveyed down the shaft.

Plymouth Iron-Works.—About six o'clock on the 14th inst. David Wherry was drastically hurt by an explosion of fire-damp, which has prevented the John Roemer's pit from being worked since.

Wandale Colliery.—On the 11th inst., a young man about to descend the shaft had not got nearly into the tub when the engine was set a going, and, before he had, he was precipitated in the bottom, and killed on the spot.

Gulbury.—A dreadful accident took place at Gulbury pit belonging to Messrs. Whitehouse and Underhill on the 11th inst. The men had just commenced work, and were clearing the pit of the muggles, when a boy was ordered to go into one of the openings for some tools, on receiving, was considerably of the presence of sulphuretted hydrogen gas, but no notice was taken of this fact, and also persons were dreadfully hurt; two men and one boy died the same day, and the other five are seriously injured. The son of the Colliery Lender, one of the men killed, had his leg broken in August last, when, with the rope and the widow's end for employment, was in one house, west of ventilation is stated to be the cause of the accident.

Coal Pit Accident at Biddings.—A James Sharp was at his work in one of the coal pits, on Wednesday street last week, and killed himself on the spot.

Coal in New South Wales.—The cost of the coal consumed in Sydney during the half-year ending 31st December last, averaged 11. 2s. 7½d., which was 10. 7½d. more than in London, and 13s. 1½d. more than the average of the principal towns quoted in the *Miners' Directory*. The expense of coal is equivalent of 40 per cent., or nearly one-half the total expense of manufacturing gas. The production of coal from a ton of coke, in London, is about 1000 lbs.; from a ton of coke in Sydney, is 5000 lbs., or six-fold as much.—*Australian News Letter.*



### PRICES OF MINING SHARES

On the 21st of December, 1890, the following communication was received from the Hon. the Secretary of the Board of Education, London:

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On the 21st of December, 1890, the following communication was received from the Hon. the Secretary of the Board of Education, London:

CRUZEIRO GOLD OF GOLD AND SILVER.  
 100000 Cruzeiros Gold in store, per oz. 17 1/2 | New Guinea, per oz. d. 8 1/2  
 100000 Cruzeiros Gold in store, per oz. 17 1/2 | Silver in store (estimated) 8 1/2

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